Patent device fits to new architectures

Sirenza Microdevices Inc has received US patent number 6,639,473 entitled "Method and/or apparatus for controlling a common-base amplifier," its sixth US patent in the area of broadband amplifier ICs, with its approach for improving distortion of common-base pre-amplifiers for wireless and fiber optic applications.

"This invention could provide improved signal integrity for balanced-detection, advanced optical receiver architectures, currently under investigation for future fiber network systems," said Kevin Kobayashi, director of Advanced Design.

Thinner QLP for wireless applications

ST Assembly Test Services Ltd, semiconductor test and advanced packaging service provider, has added a super thin version of its popular Quad Leadless Package to its technology portfolio.

Referred to as QLP-T, this package offers a high performance, low profile solution for wireless applications.

With STATS' new QLP-T, the overall package thickness has been significantly reduced using a thinner lead frame and lower mold cap, without sacrificing moisture sensitivity level performance or package reliability.

The QLP-T has a 0.50mm package profile and is ideal for applications such as power amplifiers and converters where the application space is limited in both size and height.

2001 Triquint work gets 2003 patent

TriQuint was awarded US patent 6,650,456 in November. The patent is for Ultra-high frequency interconnection using micromachined substrates.

Ultra-wide bandwidth devices, explains the preamble, employ a planar circuit structure, so capitalising on continued advancements in IC design and fabrication technology. IC dimensions may be in the order of about 0.1microns to about 10microns.

However, signal sources arrive at the planar circuit structure via coaxial cable, which may have a diameter between about 0.2mm and about 1mm.

The signal source therefore requires an electrical connector between the coaxial signal cable and the planar circuit.

A coax-to-planar circuit transition is needed to couple the signal to the device circuit. In order to accommodate this transition, bonding pads, circuit bends, and tapered circuit sections are required.

However, as the operational bandwidth increases, large coupling losses occur at certain frequencies due to substrate mode coupling. That is, the input signals couple to the substrate instead of coupling to the desired circuit on the substrate.

Theoretical analysis shows that substrate mode coupling occurs when signal frequency reaches a threshold value. This threshold value is inversely proportional to the substrate thickness.

An ultra-wide bandwidth device needs a threshold frequency value as high as possible, so that signals, having frequencies beneath the threshold value, do not couple to the substrate instead of the desired circuit. In device design, it is important to push this coupling threshold frequency out of the desired bandwidth signal.

Based on the inverse proportionality relationship between threshold frequency and the substrate thickness, the frequency modes at which signal coupling to the substrate can be eliminated (or significantly reduced) is by decreasing the substrate thickness or reducing the bonding pads dimensions.

For example, an ultra-wide bandwidth lithium niobate modulator requires a substrate thickness less than 0.25mm. But, decreasing substrate thickness or bond pad width has drawbacks in large-scale production.

Thin substrates are very difficult to handle and very fragile, increasing per unit cost and decreasing profitability and component reliability. In addition, small bond pads have large mismatches with coax connectors, demand exacting accuracy and critical tolerances during fabrication and assembly, and increase labour and capital requirements, also increasing costs and decrease profits and reliability.

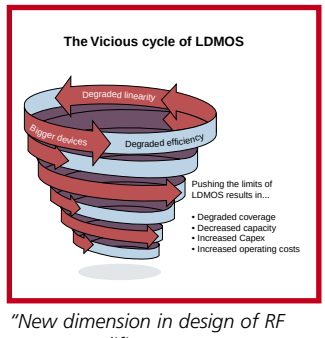
What is needed is an electronics device and a method of manufacture that avoids these disadvantages.

To address the deficiencies, the TriQuint invention provides an electronics device, a method of manufacture, and a system.

The electronics device includes a substrate that has first and second opposing surfaces and first and second thicknesses, where the second thickness is less than the first thickness.

The electronics device further includes a conductive trace having an input and an output end, located over the first substrate surface, where at least one of the input or output ends is aligned with the second substrate thickness.

Nitronex Gan RF power amplifiers



"New dimension in design of RF power amplifiers."

Based on Nitronex's Sigantic technology, devices for 3G applications with an operating voltage of 34V are now available for sampling.

The devices will be available in 10W and 20W versions (WCDMA power). Devices operating at 38V will be released in the near future.

Paul Williams, Nitronex's MD for Europe says: "The higher operating voltage characteristics we are now seeing promises to bring a new dimension in the design of RF power amplifiers.

"Increased operating voltage allows designers to take advantage of design techniques not possible with traditional devices."

Nitronex CEO, Jack Hillson, said "No other supplier of GaN devices has come close to the overall performance we have achieved at Nitronex. The real performance of GaN is starting to be realised and with the use of our Sigantic technology will enable GaN power transistors to be available on a production basis."

Trying to leverage LDMOS for 2.5 and 3G is a vicious cycle with serious performance and cost implications.

Web: http//www.nitronex.com